STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
AMENDED

REPORT OF EXAMINATION

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
November 7, 1988	G2-27450		

NAME
City of DuPont

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
MS WRE1-1	Tacoma	Washington	98477

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Bell Hill Well #2

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	1,000	1,237

QUANTITY, TYPE OF USE, PERIOD OF USE		
1,237 acre-feet per year	Municipal supply	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
1,200 feet south and 900 feet east of the west quarter corner of Section 25.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NW¼SW¼	25	19	1E	11	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of DuPont, Pierce County, Washington.

DESCRIPTION OF PROPOSED WORKS

A 16" x 516' well equipped with a pump capable of discharging 1,000 gpm.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	Completed	February 1, 1994

REPORT

BACKGROUND:

On November 7, 1988, the Weyerhaeuser Real Estate Company filed an application requesting the right to withdraw public ground water from a well, in the amount of 1,200 gpm, for municipal supply to the City of DuPont. The well is designated Bell Hill Well No. 2, and is one well of a multi-well water supply system that will consist of Bell Hill Wells No. 1 (permitted under G2-27326) and 2, and proposed wells at Hoffman Hill. The system is designed to serve the area delineated by the City of DuPont Comprehensive Plan, within Local Improvement District (LID) No. 1.

A legal notice of the applicant's proposed withdrawal was prepared by department staff and duly published by the applicant in "The News Tribune" of Tacoma, Washington. No objections to this appropriation were received.

On June 5, 1990, the applicant was issued a Temporary Permit to drill, test, and develop the proposed well.

INVESTIGATIONS:

Field investigations were conducted periodically during the progression of well drilling activities and facilities construction. Other inquiry included:

- Review of pertinent state records including recorded water rights.
- Analysis of the Lake Sellers Groundwater Development, Phase I Feasibility Assessment prepared by Hart-Crowser, Inc.
- Review of the Water System Comprehensive Plan prepared by Gardner Consultants, Inc.
- Review of the Comprehensive Plan and Land Use Zoning Code FEIS, prepared for the City of DuPont.
- Analysis of the Hydrologic Report for Bell Hill Well No. 1 and the Hydrologic Report for Bell Hill Well No. 2, both prepared by Hart-Crowser, Inc.
- Review of the Report of Examination for Application G 2-27326, Bell Hill Well #1.

Location and Site Description

An overview and description of the site and area is included in the Report of Examination for Bell Hill Well #1 (G 2-27326), and is applicable to Bell Hill Well #2.

Well construction and Aquifer Testing

Construction, installation, and testing of Bell Hill Well No. 2 began July 10, 1990 and was concluded on October 27, 1990. Bell Hill Well #2 was drilled approximately 100 feet northwest of Bell Hill Well #1, adjacent to the concrete reservoir and pumphouse. The well was drilled using the cable tool method to a total depth of 516 feet below ground surface, or approximately 250 feet below mean sea level. The upper 362 feet were drilled with 20 inch casing and the lower 154 feet were drilled using 16 inch casing.

A temporary screen was installed in the Flett Creek Aquifer at a depth of between 268 and 282 feet, and the well was used as a monitoring well during the pumping test of Bell Hill Well #1. Upon completion of the test, the temporary screen was removed and the well was completed in the Lakewood Glacial Aquifer, and screened at a depth of 456 to 503 feet.

Water Right Summary

There are presently two independent water supply and distribution systems within the City of DuPont service area; the El Rancho Madrona (City owned) and Bell Hill systems. The City has discontinued domestic use of the older Village Wells, but these wells may be utilized for park irrigation purposes. The El Rancho Madrona water system will be integrated into the larger system as development occurs. The wells are covered under the following Water Rights:

G 2-27326	Bell Hill Well #1 950 gpm/1,149 acre-feet per year
G 2-20970C	El Rancho Madrona Well 80 gpm/18 acre-feet per year
636-D	Village Well #1 60 gpm/44 acre-feet per year
635-D	Village Well #2 150 gpm/138 acre-feet per year
	1,240 gpm/1,349 acre-feet per year

The above allocations were all made for primary supply to meet existing or future demand. Because the two "Village Wells" will not be used for domestic supply, these wells will not be included in the summary of existing domestic rights. Therefore, the total water allocation available to the City of Dupont at this time is 1,167 acre-feet and 1,030 gpm. An increase of 1,237 acre-feet, in addition to the City's existing 1,167 acre-feet, is required to meet the projected full build out of the service area (2,404 acre-feet per year).

Effect On Existing Rights

From 1909 until 1976, the E.I. DuPont de Nemours Company operated an explosives manufacturing plant in the vicinity of the City of DuPont. Water use by the Company was authorized under the following Water Rights:

633-D	Well 320 gpm/17.68 acre-feet per year
634-D	Well 550 gpm/305 acre-feet per year
170-A	Well 1450 gpm/2340 acre-feet per year
3289	Unnamed spring 0.025 cfs/no annual amount

The DuPont Company land holdings were sold to the Weyerhaeuser Company in 1976. The above water rights transferred to the Weyerhaeuser Company, but have not been in use for more than 5 years. It is reported in the Comprehensive Plan and Land Use Zoning Code FEIS, that 3 wells comprise the industrial system, and that saltwater intrusion may be a problem in 2 of the wells. Due to nonuse, the rights associated with this industrial system should be relinquished to the state, and it is anticipated that the system, because of it's age, will be abandoned. It is noted that these wells are used for fire protection at this time.

Records are available for 7 additional wells that were constructed on the DuPont Company property. Water Rights have not been issued for withdrawals from these wells, and these wells have not been in use for more than 5 years, and should be properly abandoned.

A 24 hour pumping test was conducted in the Lakewood aquifer and the analysis reported in the Hydrologic Report for Bell Hill Well No. 2. The testing revealed that the well is capable of producing up to 1,000 gpm with a predicted drawdown of approximately 94 feet after up to 10 days of pumping. The well is capable of producing 800 to 900 gpm for longer periods of up to 100 days. The aquifer exhibits the following characteristics:

- An average aquifer transmissivity of 20,000 to 30,000 gpd/ft was calculated based on the drawdown and recovery data.
- A well loss coefficient of 6.6 was calculated based on the step rate pump test data.
- Drawdown and recovery data indicate a discharge boundary effect after pumping for 30 minutes.
- The laboratory results indicate that the groundwater meets all drinking water standards except that for manganese.

Ecology's review and analysis of the pump tests and reports was performed by staff hydrogeologist Robert Garrigues. Based on this analysis the following issues were identified as potential concerns:

- Likelihood of saltwater intrusion as a result of pumping.
- Potential drawdown-induced interference with downgradient wells (senior water rights) in the respective aquifers.
- Need for analysis of combined effects of pumping both aquifers, with regard to the above concerns.

A Technical Memorandum (described in the Report of Examination-G 2-27326) was submitted by Hart Crowser, Inc. on September 6, 1991. The analysis redefined the estimated radius of influence of pumping Bell Hill wells, both individually and collectively, and presented the following conclusions:

- The capture zone does not extend out to areas of concern for interference with Sequalitchew Creek, or spring/seep flows. The radius of influence was estimated to be approximately 5,500 feet in the downgradient direction (west).
- The modeling results indicate that pumping Bell Hill Well No. 2 at a rate of 1,000 gpm should not result in saltwater intrusion. However, chloride monitoring will be required as part of the periodic Department of Health water quality analysis.
- Water level monitoring associated with pumping Bell Hill Well No. 2 indicates that measurable pumping-induced leakage from the Flett Creek aquifer to the Lakewood Glacial Unit through the Clover Park Aquitard is not anticipated.

The Summary and Conclusions of the Hydrologic Report for Bell Hill Well No. 2, present a maximum short-term pumping rate recommendation of 1,000 gpm. This recommended pumping rate assumes no change in the recharge effects and no well interference and/or interference effects from future wells. Water level monitoring is required twice monthly to assess long-term aquifer recharge effects and limiting boundaries of the aquifer, and to determine appropriate adjustments to the pumping rate.

DISCUSSION

The population growth and development of south Puget Sound in recent years has largely bypassed the City of DuPont and the Nisqually Delta area. The population of the City of DuPont has remained relatively stable in past years, with a current population of less than 700. Area growth is expected to increase dramatically however, with the addition of the Weyerhaeuser Northwest Landing Development. Indications are that the area to the north and west of the City will be generally developed over the next 10 years, and a population projection of 14,255 at full build out has been estimated.

The applicant requested 2,000 gpm and an annual allowance of 6,000 acre-feet to supply the area designated in the Comprehensive Plan and Land Use Zoning Code FEIS. The Comprehensive Plan identifies various commercial, industrial and mixed uses that require a total water supply of 1,491 gallons per minute, or 2,404 acre-feet per year upon ultimate development of the service area.

Other ground water Rights that have been issued in the vicinity of the City of DuPont include:

577-D	Well (N.P. Railway) -Not in use- 75 gpm/83.4 acre-feet per year
G 2-22352	Well (Clark) 20 gpm/3 acre-feet per year
G 2-26846	Well (USCE) 490 gpm/100 acre-feet per year
S 2-21199	Unnamed spring (Reed) 0.03 cfs/2 acre-feet per year
S 2-21318	Unnamed spring (Weigard) 0.01 cfs/3 acre-feet per year

Records are available for a number of additional wells constructed in the vicinity of the City of DuPont, and within 3 miles from Bell Hill Well No. 1, as follows:

10 wells, intended for domestic use, have been constructed on private land. All but one of these wells is completed above sea level, in the upper (Flett Creek) aquifer.

18 wells, intended for domestic and irrigation use, have been constructed on land under the jurisdictior of Fort Lewis. It has been reported that a number of these wells have been completed in more than one aquifer, a procedure that is not allowed under state regulations. Well logs are not available for many of these wells, nor have water rights been issued.

Based on area water use and data on well spacing, constructed depth and area stratigraphy, there should be no impacts to existing rights, no well interference, and no consequences associated with saltwater intrusion through pumping from Bell Hill Well No. 2. The applicant shall take measures to ensure these impacts do not occur and is reminded that should adverse consequences develop, the withdrawal from Bell Hill Well No. 2 may be regulated.

CONCLUSIONS:

Based on an analysis of the existing data, it was determined that water was available for withdrawal from th Lakewood Glacial Unit aquifer, that the withdrawal was in the public interest and for a beneficial use, an should not detrimentally effect existing rights.

RECOMMENDATIONS:

Approval of this application and issuance of a permit to allow appropriation of 1,000 gpm from Bell Hill We No. 2, for municipal supply, is recommended. The well is presently equipped with a pump capable (discharging 1,000 gpm, and it is feasible to operate Bell Hill Well #2 approximately 18 hours a day, producir 1,237 acre-feet per year.

Because of the high levels of manganese found in the water, the well should be used at a rate which will allo dilution with water withdrawn from Bell Hill Well # 1 to reduce the manganese levels.

The place of use is designated as the area served by the City of DuPont. The period of use is year round. Tl total annual withdrawal shall not exceed 1,237 acre-feet.

Approval is subject to existing rights and the following conditions and provisos:

The water appropriated under this application will be used for public water supply. The State Board of Heal rules require public water supply owners to obtain written approval from the Office of Water Supp Department of Health, Mail Stop LD-11, Building 3, Olympia, Washington 98504, prior to any new constructi or alterations of a public water supply system.

All water wells constructed within the State shall meet the minimum standards for well construction a maintenance as provided under RCW 18.104, Washington Water Well Construction Act of 1972, and Chapt 173-160 WAC, Minimum Standards for Construction and Maintenance of Wells.

Installation and maintenance of an access port as described in WAC 173-160-355 is required. An air line and gauge may be installed in addition to the access port.

An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through -040. Meter readings shall be recorded at least monthly.

"Water level measurements of Bell Hill Well #2 shall be made and recorded at least twice per month during the first year of operation, and at least monthly there after. The measurements shall be made using a consistent methodology in accordance with accepted industry standards. A yearly summary of monthly water level data and monthly totals of water pumped from Well #2 shall be submitted annually to the Department of Ecology, Southwest Regional Office. The above data shall be submitted during the month of February, or more frequently if requested by Ecology."

"In conjunction with Washington State Department of Health routine bacteriological sampling requirements, quarterly chloride samples shall be taken. The sampling results shall be submitted yearly to the Department of Ecology's Water Resource Program."

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the State in the best public interest. Favorable consideration of this application has been based on sufficient waters available, at least during portions of the year. However, it is pointed out to the applicant that this use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

This permit is subject to the implementation of the minimum requirements established in the Interim Guidelines for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology and Conservation Programs, July 1990, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this permit, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

A certificate of water right will not be issued until a final investigation is made.

REPORTED BY: _____ Date: January 19, 1993

The statutory permit fee for this application is $20.00.